



DR. RICHARD E. McCLELLAND

Director



SUPERIOR TECHNOLOGY



FOR A



SUPERIOR ARMY



31 May 2005

TARDEC
U.S. ARMY TANK AUTOMOTIVE RESEARCH, DEVELOPMENT AND ENGINEERING CENTER

RDECOM

TACOM
The Soldier and Ground Systems
Life Cycle Management Command

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MISSION

To research, develop, engineer, leverage and provide advanced systems integration of technology into ground systems and support equipment throughout the life cycle.



SUPERIOR TECHNOLOGY



FOR A



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TARDEC EXECUTIVE TEAM

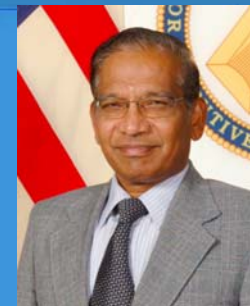
SUPERIOR TECHNOLOGY FOR A SUPERIOR ARMY



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Acting Executive Director/
Technical Director
Research



Dr. Richard E. McClelland
Director



Mr. Vemula P. Rao
Executive Director
Engineering



Mr. Thom Mathes
Executive Director
Development



Mr. Dennis J. Wend
Executive Director
Tech Transfer

Mr. Timothy F. Tarczynski
Executive Director
Operations



COL Craig G. Langhauser
Military Deputy

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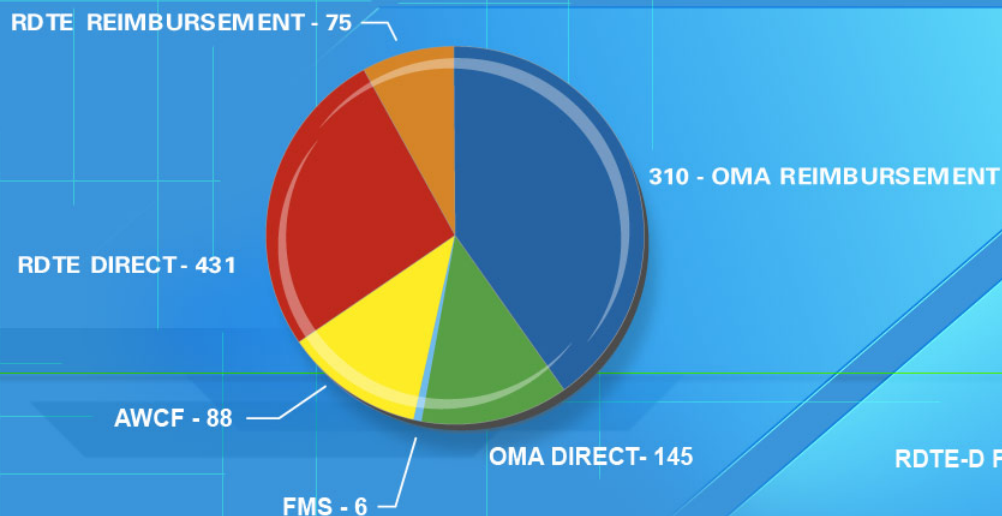




TARDEC MANPOWER & FUNDING (AS OF 30 APRIL 2005)

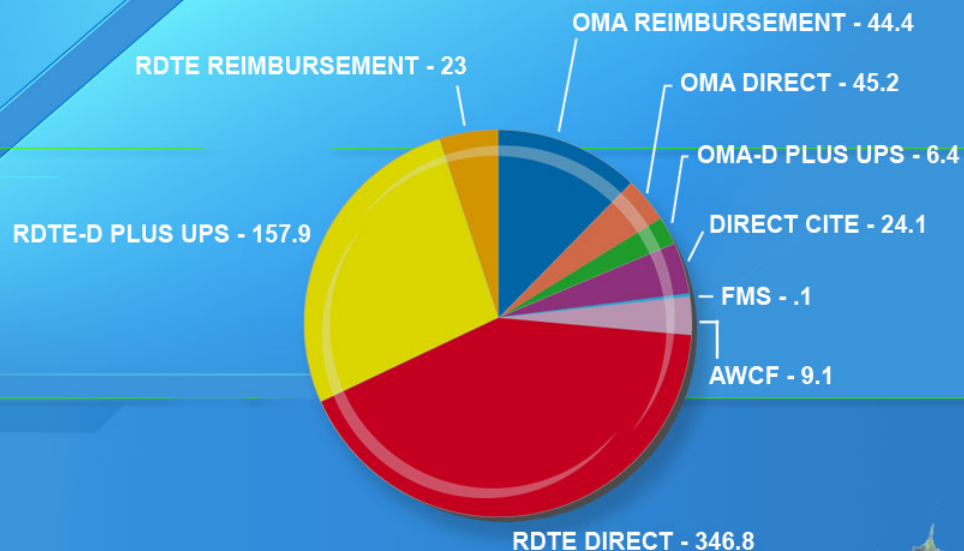
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AUTHORIZED CIVILIAN STRENGTH 1055



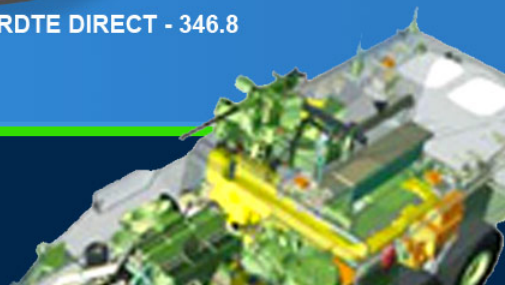
FY05 TOTAL PROGRAM 492.7M

\$M



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OUR PEOPLE - EDUCATED

SUPERIOR TECHNOLOGY FOR A SUPERIOR ARMY

1036 PERMANENT EMPLOYEES

19 INTERNS AND STUDENTS

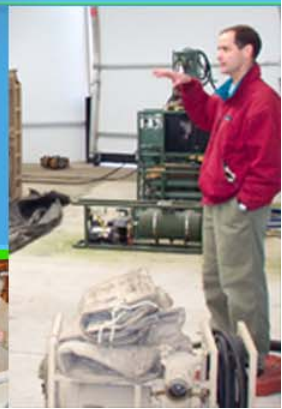
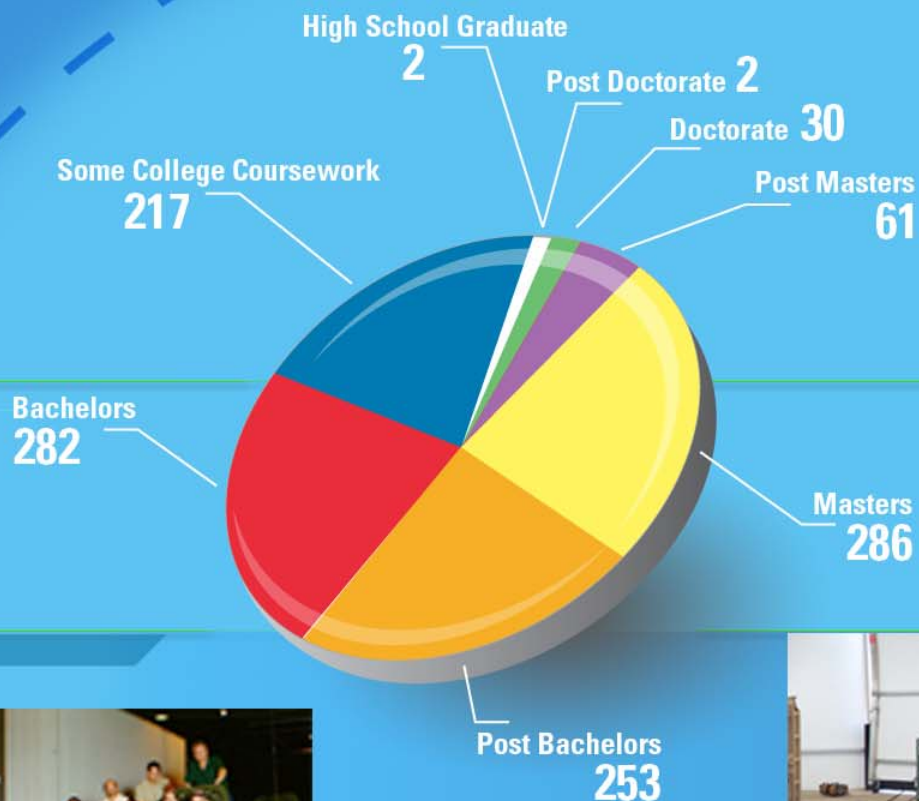
10 MILITARY MEMBERS

18 % MINORITIES

81% ENGINEERS

24% WOMEN

68 CO-OPS



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CO-OP PROGRAM EDUCATION AND LEARNING FOR THE FUTURE

SUPERIOR TECHNOLOGY FOR A SUPERIOR ARMY

ENGINEERING DISCIPLINES

MECHANICAL	37%
ELECTRICAL	22%
COMPUTER	27%
GENERAL	10%
CHEMICAL	1%
CHEMIST	5%
PHYSICAL SCIENCE	1%
MATHEMATICIAN	1%

UNIVERSITY PARTNERSHIPS

UNIVERSITY OF MICHIGAN
UNIVERSITY OF MICHIGAN - DEARBORN
MICHIGAN STATE UNIVERSITY
MICHIGAN TECH
WESTERN MICHIGAN UNIVERSITY
WAYNE STATE UNIVERSITY
UNIVERSITY OF DETROIT - MERCY
LAWRENCE TECH
OAKLAND UNIVERSITY
ROCHESTER IT
SAGINAW VALLEY
CALVIN COLLEGE
TENNESSEE STATE
UNIVERSITY OF TOLEDO
INDIANA IT
ALBION





STATE OF THE ART LABS

SUPERIOR TECHNOLOGY FOR A SUPERIOR ARMY

ADVANCED COLLABORATIVE ENVIRONMENTS

ADVANCED CONCEPTS LAB

ADVANCED MATERIALS &
MANUFACTURING CENTER

BRIDGING

PHYSICAL PROTOTYPING

ROBOTICS

CREW STATION & EMBEDDED SIMULATION

PROPULSION

FUELS & LUBRICANTS

TRACK & SUSPENSION

WATER

LASER PROTECTION

ELECTRONICS ARCHITECTURE

NEXT GENERATION SOFTWARE



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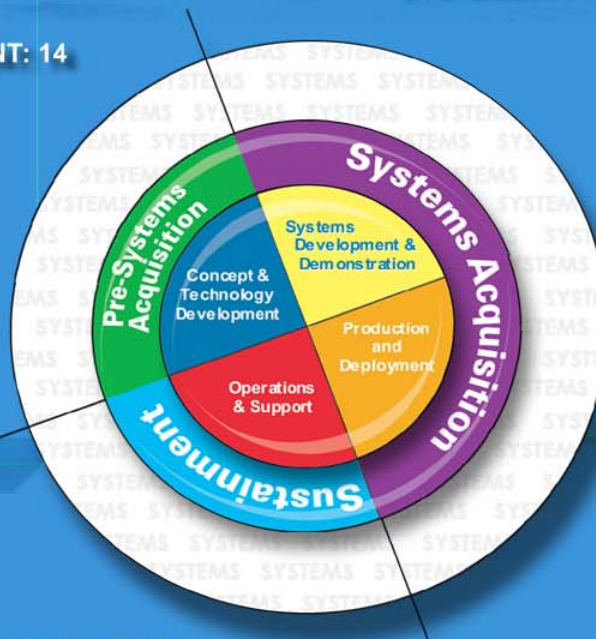
IMPACTING SYSTEMS THROUGHOUT THE LIFE CYCLE

SUPERIOR TECHNOLOGY FOR A SUPERIOR ARMY

TOTAL SYSTEMS IN DEVELOPMENT: 14

Examples

- ADVANCED TRACK & SUSPENSION
- ROBOTICS AND INTELLIGENT MOBILITY
- HYBRID ELECTRIC POWER SYSTEMS
- PETROLEUM AND WATER QUALITY
- VIRTUAL PROTOTYPING
- FULL SPECTRUM ACTIVE PROTECTION
- DETECTION AVOIDANCE
- DIESEL TECHNOLOGY
- SOFTWARE ENGINEERING
- VEHICLE ELECTRONICS
- INTEGRATED ARMOR STRUCTURE
- MINEFIELD DETECTION AND NEUTRALIZATION SYSTEMS
- LIGHTWEIGHT ARMY BRIDGING



SYSTEMS IN PRODUCTION / DEPLOYMENT: 46

Examples

- FCS TECHNOLOGIES
- STRYKER
- ATLAS II
- MODULAR CAUSEWAY SYSTEM (MCS)
- BRIDGE ERECTION BOAT (BEB)
- RAPIDLY EMPLACED BRIDGE SYSTEM
- OBJECTIVE HIGH MOBILITY ENGINEERING
- EXCAVATOR
- MINEFIELD DETECTION SYSTEMS

FIELD ITEMS SUPPORTED: 2801

Examples

- | | |
|--|---|
| ■ TANK AUTOMOTIVE (COMBAT, TACTICAL, CE/MHE) | ■ TRAILERS & SEMI-TRAILERS, TRUCKS, RECOVERY VEHICLES |
| ■ STRYKER, ABRAMS, BRADLEY, HERCULES | ■ BRIDGING PRODUCTS |
| ■ M109, M9 ACE, M113 FMTV, HMMWV | ■ WATERCRAFT |
| ■ HET, HEMTT (ESP) | ■ WATER, FUELS AND LUBRICANTS |
| ■ CE, MHE | ■ VEHICULAR AND MECHANICAL COUNTERMINE |





SEVEN PRINCIPAL PRODUCT LINES

SUPERIOR TECHNOLOGY FOR A SUPERIOR ARMY



LOGISTICS EQUIPMENT



COUNTERMINE



MILITARY BRIDGING



FUELS & LUBRICANTS



**WATER GENERATION
& PURIFICATION**



COMBAT & TACTICAL VEHICLES



**FUEL STORAGE
& DISTRIBUTION**

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PARTNERSHIP APPROACH CENTERS OF EXCELLENCE

SUPERIOR TECHNOLOGY FOR A SUPERIOR ARMY



SOLDIER-CENTRIC



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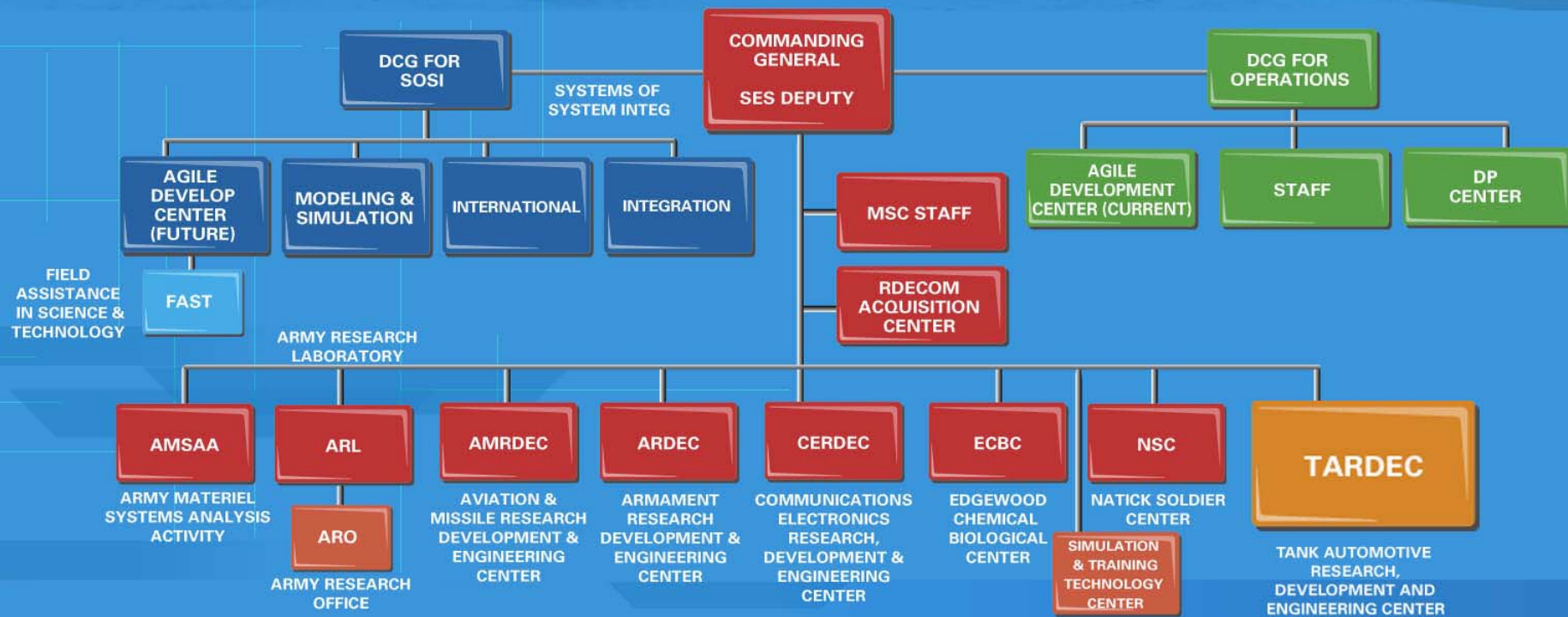




RDECOM ORGANIZATION

WWW.RDECOM.ARMY.MIL/ORG.HTML

SUPERIOR TECHNOLOGY FOR A SUPERIOR ARMY





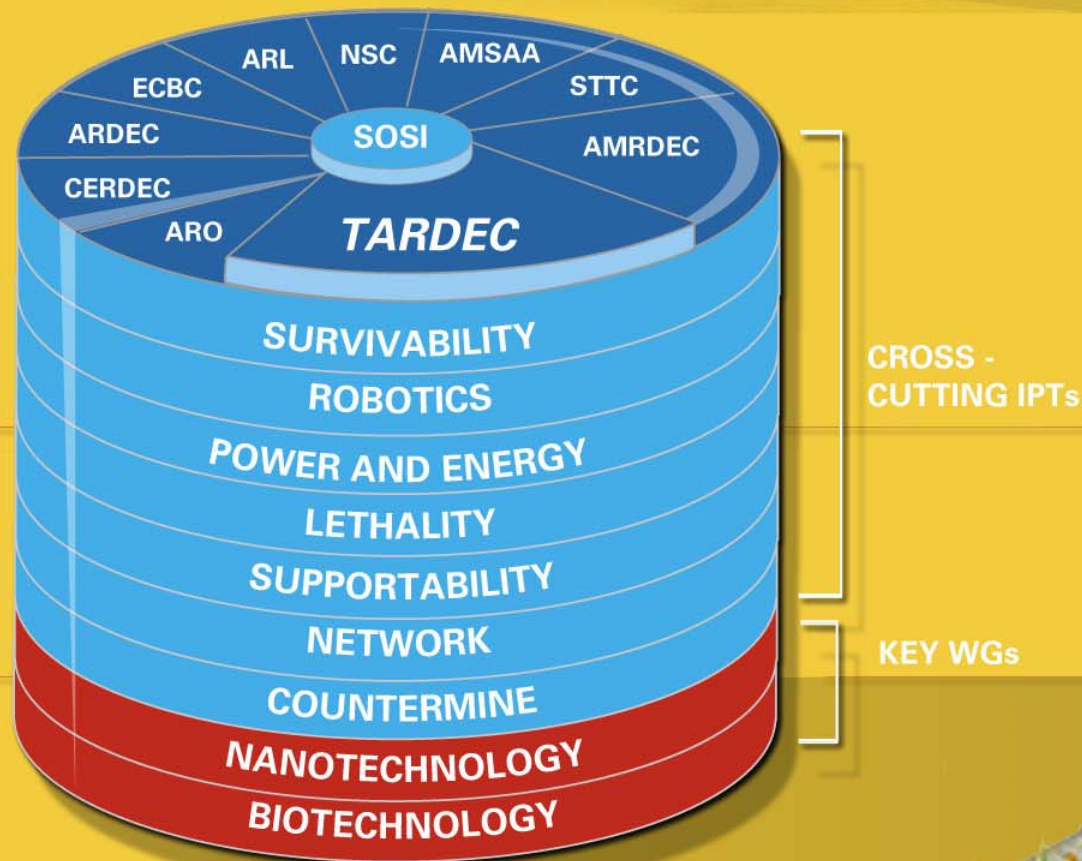
RDECOM -- MEETING THE NEEDS OF THE SOLDIER

SUPERIOR TECHNOLOGY FOR A SUPERIOR ARMY

1 PROMOTES COLLABORATION AND SYNERGY

2 UNIFIED & BALANCED S&T STRATEGY

3 STRUCTURED & POSITIONED TO DELIVER CAPABILITIES TO SOLDIER



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DUAL NEEDS FOCUS

SUPERIOR TECHNOLOGY FOR A SUPERIOR ARMY



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COOPERATIVE AGREEMENTS / CRADAs

SUPERIOR TECHNOLOGY FOR A SUPERIOR ARMY

Akzo Nobel
Alion Science & Technology
Alberici Constructors
Altair Engineering
American Government Marketing
American Trucking Assoc.
Automation Alley
BLV Motorsports
Columbia University
Core Technologies
Dana Corp.
Deere & Company
Delphi
Detroit Public Schools
Detroit Science Center
EDS Unigraphics
International Truck

General Dynamics Land Systems
General Motors Corp.
Holographic Imaging
Ibis Tek
Intrepid World Communications
Klune Industries
Macomb County (MI)
MSC.Software
National Biodiesel Board
Oakland County (MI)
Onodi Tool & Engineering
Permo-Drive
Precision Combustion
PREDICT
RaeBeck Automotive
Saab Barracuda LLC
Smiths Aerospace
TeraBurst Networks
United Defense

U.S. FIRST
Water Visions International
Wayne County (MI)
Wayne State University
William Beaumont Hospital
NASA





TARDEC TECHNOLOGIES FOR AN ARMY AT WAR & TRANSFORMING

SUPERIOR TECHNOLOGY FOR A SUPERIOR ARMY



Fully Networked Battle Command capabilities bridge from the Current to Future Force and enable interdependent network-centric warfare



Enhanced Capabilities

Increasingly:

- Integrated
- Expeditionary
- Networked
- Decentralized
- Adaptable
- Decision Superior
- Lethal

Accelerated Development and Fielding of DOTMLPF Solutions

OIF/OEF SUPPORT:

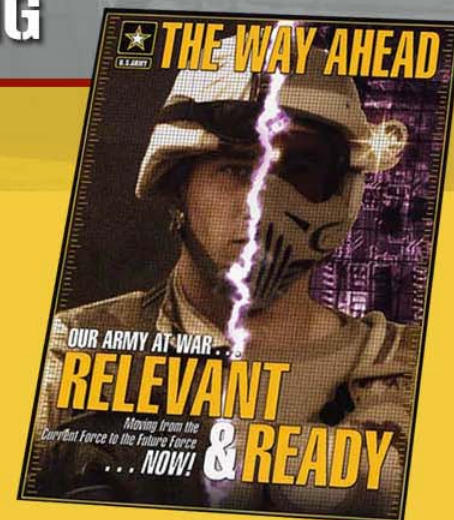
- TACTICAL VEHICLE ARMOR KITS
- VBASS
- RAPID DESIGN/PROTOTYPING TO 1ST BDE STRYKER DEPLOYMENT
- ODIS
- HERCULES ENGINE TESTING
- OIL, FUEL & LUBE SUPPORT

TRANSFORMING TECHNOLOGY FOR THE FUTURE WHILE SERVING THE FORCES IN CONTACT.

FUTURE FOCUS:

- POWER & ENERGY
- SURVIVABILITY
- INTELLIGENT SYSTEMS
- MANEUVER & SUSTAINMENT SUPPORT

Characteristics of Army Transformation: Responsiveness, Deployability, Agility, Versatility, Lethality, Survivability, and Sustainability fully support Future Joint Force Attributes





MOBILITY

SUPERIOR TECHNOLOGY FOR A SUPERIOR ARMY

1 HYBRID ELECTRIC

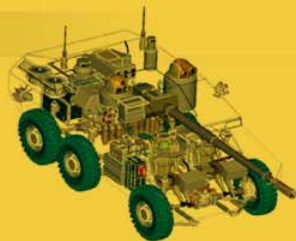
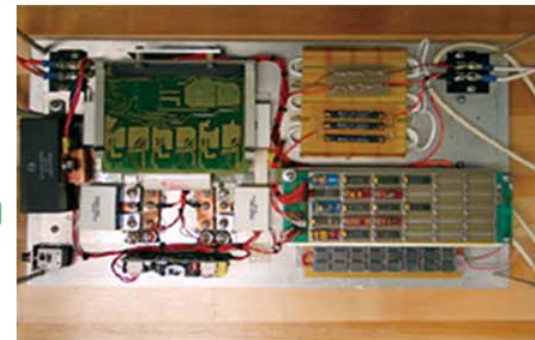
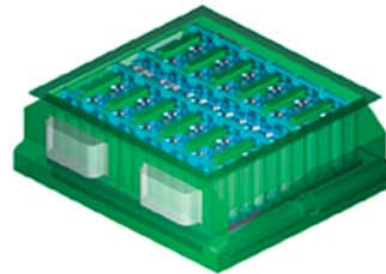
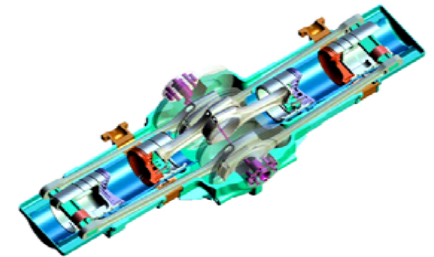
2 PULSE POWER

3 ENGINES

4 FUEL CELLS

5 SUSPENSION

6 TRACKS



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INTEGRATED SURVIVABILITY

SUPERIOR TECHNOLOGY FOR A SUPERIOR ARMY

1

ACTIVE DEFENSE

2

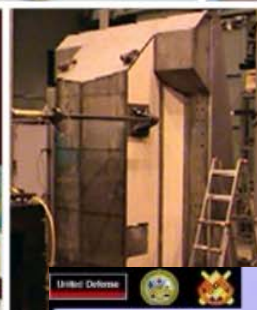
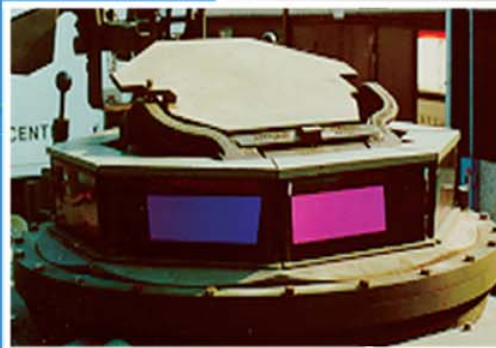
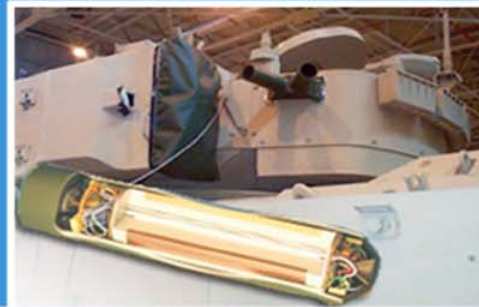
SIGNATURE MANAGEMENT

3

**LASER VISION
PROTECTION**

4

**BALLISTIC
PROTECTION**



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Red = FY04 Proposed

Holistic Survivability

Kill The Enemy
(See-Understand-Act) First
Several technologies in other FOCs

Battle Command

Sensor Fusion

LOS/BLOS Lethality

NLOS Lethality

Air-Ground

Mounted/Dismounted Maneuver

Maneuver Support

Maneuver Sustainment

Tng/Ldr Dev

Human Eng

Deployability

Don't be Seen!

Signature Management for FCS
TARDEC - III.GC.2001.01

Don't be Acquired!

Advanced Infrared
Obscurants
ECBC III.BC.2001.01

Advanced Radar Deception
and Countermeasures
CERDEC IV.EW.2000.01

Low Cost Counter
Reconnaissance Technology
CERDEC IV.SN.2003.01

Don't be Hit!

Full Spectrum Active
Protection Close in Layered
Shield (FCLAS)
TARDEC III.GC.2004.06

Sensor Countermeasures for the
Objective Force
CERDEC III.IS.2003.01

Hit Avoidance Regional
Protection System
TAR-04

Don't be Penetrated!

Advanced Fiber Technology for
Individual Ballistic Protection
NSC IV.SP.2004.02

Integrated Survivability ATD
TARDEC III.GC.2004.04

Don't be Killed!

Ballistic Protection for Improved
Individual Survivability
NSC IV.SP.1998.02

Lightweight Appliqués /
Structures for Protection against
AT Landmines
ARL-IV.GC.2004.01

Individual Protection
against Novel Blast Threats
NSC IV.SP.2004.01

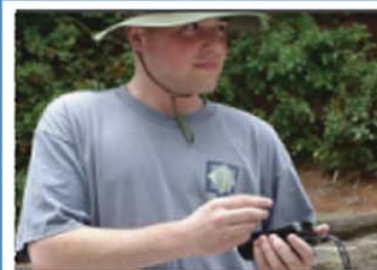
Laser Hardened Vision
TARDEC-IV.WP.2004.05



INTELLIGENT SYSTEMS

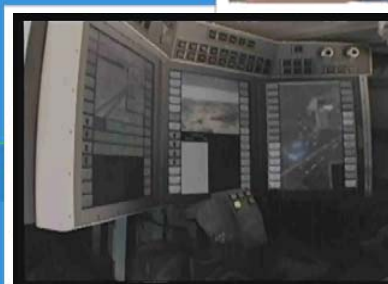
SUPERIOR TECHNOLOGY FOR A SUPERIOR ARMY

1 ROBOTIC SYSTEMS TECHNOLOGY



2 HUMAN-ROBOT INTERACTION

3 CREW INTERFACE AND
AUTOMATION



4 VETRONICS



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MANNED AND UNMANNED TECHNOLOGY

SUPERIOR TECHNOLOGY FOR A

FY93

Crewman's
Associate
Baseline SMI

FY96

System Integration
(Lab)

FY98

Demo III
Semi-Autonomous
Development

FY00

Crew integration and Automation (CAT)
Robotic Follower (RF) ATDs
Warfighter Experiment Fort Bliss

FY03

FY06

FY08

IVES STO
Field Experiment

CAT and RF ATDs
Final Warfighter Experiment

ARV Robotic
Technologies STO

Human Robot
Interaction STO

FCS & FFW

Continuous Technology Transition To
PM FCS & PM Soldier

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MANEUVER SUSTAINMENT & SUPPORT

SUPERIOR TECHNOLOGY FOR A SUPERIOR ARMY

1

WATER GENERATION & PURIFICATION

2

PETROLEUM, OILS & LUBRICANTS

3

MECHANICAL COUNTERMINE

4

COMBAT ENGINEERING/BRIDGING

5

COMMERCIAL CONSTRUCTION

6

FUTURE TACTICAL TRUCK SYSTEM



Weight

Adv

Mechanics

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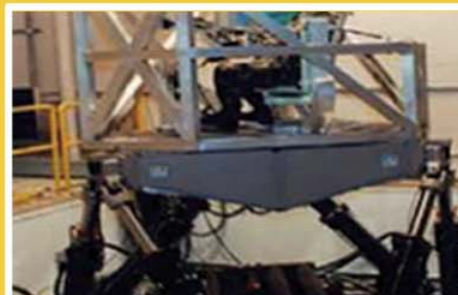




CROSS-CUTTING CAPABILITIES

SUPERIOR TECHNOLOGY FOR A SUPERIOR ARMY

- 1 ADVANCED CONCEPTS**
- 2 PHYSICAL/ANALYTICAL SIMULATION**
- 3 ADVANCED COLLABORATIVE ENVIRONMENTS**
- 4 RAPID PROTOTYPING**



IMMERSIVE VIRTUAL ENVIRONMENTS

ARMY LEADER IN MODELING AND SIMULATION

REDUCES COSTS AND TIME

**PROTECTS THE WARFIGHTER BY REDUCING
DANGEROUS PHYSICAL TESTING**



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TARDEC IS WEARING DOG TAGS



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